CLIN 421 -Bill of Materials

CLIN 421 ---- GENERATOR Model: 20REOZJB, 20 kw,240 volts,1 phase, FIXED DIESEL EG, Rail Mounted radiator , 83 Fuel Amps,

Please review the bill-of-materials for your selection. Click on the highlighted part numbers to display the contents of each kit. When your review is complete, click the "Back" button to return to the CLIN Description page to continue the ordering process.

Part Number	Qty	Description
222661	1	Nameplate Rating, Standby
273743	1	Run Relay, 12v
274608	1	Air Cleaner Restriction Indicator
333702	1	Voltage, 60Hz, 120/240v, 1ph, 3w
352374	1	Fuel Pressure Gauge
701-184-230-FAA	1	Literature Kit, CLINs 421-422
GM17032-KA1	1	Controller Connection Wiring
GM17032-KA2	1	Failure Relay w/Harness, 1 Fault
GM17032-KA6	1	Shunt Trip Wiring, 20-60 kW
GM17425-MA10	1	Controller, DEC 550
GM17725-KA1	1	Isochronous Governor, 12v
GM19369-GA9-C421	1	EG Spec, 20kW, Diesel, 120/240v, 1ph
GM19371-MA4	1	Alternator, 4P5
GM19373-MA1	1	Skid, 34"
GM19375-MA2	1	Heavy Duty Air Intake
GM19451-KA2	1	Block Heater,1500W, 190-240v, 1ph
GM19460-MA1	1	Control & Harness, JD3029
GM19461-KA2	1	Flexible Fuel Lines
GM19532-KA2	1	Line Circuit Breaker, Dual 125/ 100 A
GM19877-KP1	1	Flex. Exhaust Kit
GM20695-KA4	1	Closed Crankcase Vent
GM20922-KP1	1	Load Bank Spares
GM21241-KP2	1	Exhaust Manifold & Turbo Blanket Kit
GM23251-KA1	1	Turbo Manifold Pressure Gauge
GM30003-MA1	1	Cooling, Unit Mounted Radiator
GM38385-KP1	1	Battery Rack Kit
GM38406-KA1	1	Load Bank and Wiring
GM42314-KP1	1	EG Site Spares Kit
GM42315-KP1	1	EG Initial Spares Kit
PA-225290	2	Battery 12v, 650CCA, Dry
PA-293906	1	Remote Emergency Stop Kit
PA-354752	1	Load Bank Controller Kit
PAA-326766	1	Battery Charger Kit
Std. - Fuel Pump	1	Hand Fuel Primer Pump

END OF CLIN 421

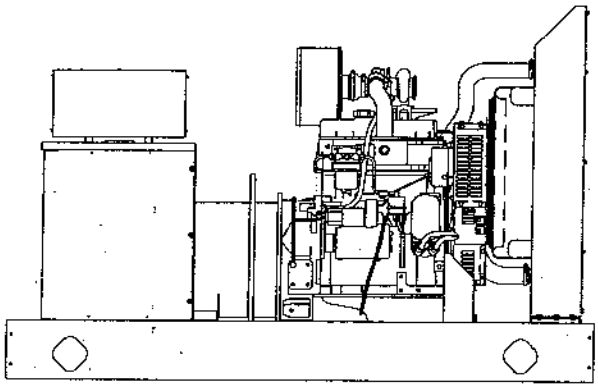
Model: 20REOZJB

KOHLER POWER SYSTEMS 190-600 V 4 Cycle Diesel

ISO 9001 KOHLER POWER SYSTEMS NATIONALLY REGISTERED

Ratings Range

		60 Hz	50 Hz
Standby:	kW	25-27	18-21
	kVA	25-34	20-26
Prime:	kW	22-24	17-19
	kVA	23-30	18-24



Standard Features

- Kohler Co. provides one-source responsibility for the generating system and accessories.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- The 60 Hz generator set offers a UL 2200 listing.
- The generator set accepts rated load in one step.
- A one-year limited warranty covers all systems and components. Two-, five-, and ten-year extended warranties are also available.
- Alternator features:
  - Kohler's Fast-Response™ III wound field (WF) design alternator provides excellent voltage response and short-circuit capability using an auxiliary power brushless exciter.
  - Kohler's unique Fast-Response™ II excitation system delivers excellent voltage response and short circuit capability using a permanent magnet (PM)-excited alternator.
  - The brushless, rotating-field alternator has broadrange reconnectability.
- Other features:
  - Controllers are available for all applications. See controller features inside.
  - The low coolant level shutdown prevents overheating (standard on radiator models only).
  - Integral vibration isolation eliminates the need for under-unit vibration spring isolators.

Generator Set Ratings

				130°C Rise Standby Rating		105°C Rise Prime Rating	
Alternator	Voltage	Ph	Hz	kW/kVA	Amps	kW/kVA	Amps
4P4W/4P4	120/208	3	60	26/33	90	24/30	83
	127/220	3	60	26/33	85	22/28	72
	120/240	3	60	26/33	78	24/30	72
	120/240	1	60	25/25	104	23/23	96
	139/240	3	60	25/31	75	22/28	66
	220/380	3	60	27/34	51	24/30	46
	240/416	3	60	26/33	45	24/30	42
	277/480	3	60	25/31	38	22/28	33
	347/600	3	60	25/31	30	22/28	26
	110/190	3	50	21/26	79	19/24	73
	115/200	3	50	20/25	72	17/21	61
	120/208	3	50	18/23	64	17/21	58
	110/220	3	50	20/25	66	18/23	60
	110/220	1	50	20/20	91	18/18	82
	220/380	3	50	21/26	40	19/24	36
	230/400	3	50	20/25	36	17/21	30
	240/416	3	50	18/23	32	17/21	29

Available Option

- The 3029TF270 engine is certified by the Environmental Protection Agency (EPA) to conform to Tier 2 nonroad emissions regulations.

RATINGS: All three-phase units are rated at 0.8 power factor. All single-phase units are rated at 1.0 power factor. *Standby Ratings:* Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Ratings are in accordance with ISO-3046/1, BS 5514, AS 2789, and DIN 6271. *Prime Power Ratings:* Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO-8528/1, overload power in accordance with ISO-3046/1, BS 5514, AS 2789, and DIN 6271. For limited running time and base load ratings, consult the factory. Obtain the technical information bulletin (TIB-101) on ratings guidelines for the complete ratings definitions. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever. GENERAL GUIDELINES FOR DERATION: *Altitude:* Derate 0.5% per 100 m (328 ft.) elevation above 2500 m (8200 ft.). *Temperature:* Derate 1.0% per 10°C (18°F) temperature above 40°C (104°F).

Alternator Specifications

Specifications	Alternator
Manufacturer	Kohler
Type	4-Pole, Rotating-Field
Exciter type	
Wound field (WF)	Wound Exciter Field with Separate Excitation Power Winding
Permanent magnet (PM)	Brushless, Permanent-Magnet
Leads: quantity, type	12, Reconnectable
Voltage regulator	Solid State, Volts/Hz
Insulation:	NEMA MG1
Material	Class H
Temperature rise	130°C, Standby
Bearing: quantity, type	1, Sealed
Coupling	Flexible Disc
Amortisseur windings	Full
Voltage regulation, no-load to full-load	
Wound field (WF) alternator	±0.25% Average
Permanent magnet (PM) alternator	±2% Average
550 controller (with 0.5% drift due to temperature variation)	3-Phase Sensing, ±0.25%
Unbalanced load capability	100% of Rated Standby Current
One-step load acceptance	100% of Rating
Peak motor starting kVA:	(35% dip for voltages below)
480 V, 380 V 4P4W/4P4 (12 lead)	121 (60 Hz), 88 (50 Hz)

- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
- Sustained short-circuit current of up to 300% of the rated current for up to 10 seconds.
- Sustained short-circuit current enabling downstream circuit breakers to trip without collapsing the alternator field.
- Self-ventilated and dripproof construction.
- Vacuum-impregnated windings with fungus-resistant epoxy varnish for dependability and long life.
- Superior voltage waveform from a two-thirds pitch stator and skewed rotor.
- Fast-Response™ III wound field (WF) brushless alternator with auxiliary power brushless exciter for excellent load response.
- Fast-Response™ II brushless alternator with brushless exciter for excellent load response.

Application Data

Engine

Engine Specifications	60 Hz	50 Hz
Manufacturer	John Deere	
Engine model, non-emissions certified	3029TF150	3029TF120
Engine model, EPA certified	3029TF270	—
Engine type	4-Cycle, Turbocharged	
Cylinder arrangement	3 Inline	
Displacement, L (cu. in.)	2.9 (177)	
Bore and stroke, mm (in.)	106 x 110 (4.17 x 4.33)	
Compression ratio	17.2:1	
Piston speed, m/min. (ft./min.)	396 (1299)	330 (1083)
Main bearings: quantity, type	4, Replaceable Insert	
Rated rpm	1800	1500
Max. power at rated rpm, kWm (BHP)	48 (64)	42 (56)
Cylinder head material	Cast Iron	
Crankshaft material	Forged Steel	
Valve material:		
Intake	Chromium-Silicon Steel	
Exhaust	Stainless Steel	
Governor: type, make/model	Mechanical, Stanadyne/DB2	
Frequency regulation, no-load to full-load	3-5%	
Frequency regulation, steady state	±0.33% (mech. governor) ±0.25% (elect. isoch. gov.)	
Frequency	Fixed	
Air cleaner type, all models	Dry	

Exhaust

Exhaust System	60 Hz	50 Hz
Exhaust manifold type	Dry	
Exhaust flow at rated kW, m^3/min. (cfm)	6.9 (243)	5.2 (184)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	423 (793)	437 (819)
Maximum allowable back pressure, kPa (in. Hg)	7.5 (2.2)	
Exhaust outlet size at engine hookup, mm (in.)	63.5 (2.5)	

Engine Electrical

Engine Electrical System	60 Hz	50 Hz
Battery charging alternator:	12 Volt	
Ground (negative/positive)	Negative	
Volts (DC)	12	
Ampere rating	55	
Starter motor rated voltage (DC)	12	
Battery, recommended cold cranking amps (CCA):		
Quantity, CCA rating	One, 640	
Battery voltage (DC)	12	

Application Data

Fuel

Fuel System	60 Hz	50 Hz
Fuel supply line, min. ID, mm (in.)	11.0 (0.44)	
Fuel return line, min. ID, mm (in.)	6.0 (0.25)	
Max. lift, engine-driven fuel pump, m (ft.)	0.9 (3.0)	
Max. fuel flow, Lph (gph)	112 (29.6)	108 (28.6)
Fuel prime pump	Manual	
Fuel filter	Secondary, 8 Microns @ 98% Efficiency with Integral Water Separator	
Recommended fuel	#2 Diesel	

Lubrication

Lubricating System	60 Hz	50 Hz
Type	Full Pressure	
Oil pan capacity, L (qt.)	7.6 (8.0)	
Oil pan capacity with filter, L (qt.)	8.5 (9.0)	
Oil filter: quantity, type	1, Cartridge	
Oil cooler	Water-Cooled	

Cooling

Radiator System	60 Hz	50 Hz
Ambient temperature, °C (°F)	50 (122)	
Engine jacket water capacity, L (gal.)	5.7 (1.5)	
Radiator system capacity, including engine, L (gal.)	13.6 (4.6)	
Engine jacket water flow, Lpm (gpm)	110 (29)	91 (24)
Heat rejected to cooling water at rated kW, dry exhaust, non-emissions certified, kW (Btu/min.)	18.3 (1040)	14.1 (800)
Heat rejected to cooling water at rated kW, dry exhaust, EPA certified, kW (Btu/min.)	21.8 (1240)	—
Water pump type	Centrifugal	
Fan diameter, including blades, mm (in.)	483 (19)	
Fan, kWm (HP)	2.1 (2.8)	1.5 (2.0)
Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H_2O)	0.125 (0.5)	

Remote Radiator System†	60 Hz	50 Hz
Exhaust manifold type	Dry	
Connection sizes:		
Water inlet, ID hose, mm (in.)	48 (1.88)	
Water outlet, ID hose, mm (in.)	38 (1.50)	
Static head allowable above engine, kPa (ft. H_2O)	63 (21)	

† Contact your local distributor for cooling system options and specifications based on your specific application.

Operation Requirements

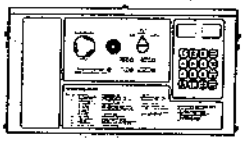
Air Requirements	60 Hz	50 Hz
Radiator-cooled cooling air, m^3/min. (scfm)‡	91 (3200)	76 (2700)
Cooling air required for generator set when equipped with city water cooling or remote radiator, based on 14°C (25°F) rise and ambient temp. of 29°C (85°F), m^3/min. (cfm)	43 (1500)	37 (1300)
Combustion air, m^3/min. (cfm)	3.3 (117)	2.4 (85)
Heat rejected to ambient air:		
Engine, kW (Btu/min.)	7.0 (400)	5.7 (325)
Alternator, kW (Btu/min.)	4.6 (260)	4.3 (245)

‡ Air density = 1.20 kg/m^3 (0.075 lbm/ft^3)

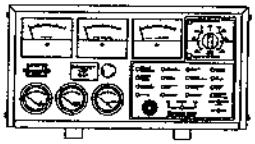
Fuel Consumption, Non-Emissions Certified	60 Hz	50 Hz
Diesel, Lph (gph) at % load	Standby Rating	
100%	8.6 (2.3)	7.0 (1.8)
75%	6.7 (1.8)	5.6 (1.5)
50%	4.9 (1.3)	4.2 (1.1)
25%	3.1 (0.8)	2.5 (0.7)
Diesel, Lph (gph) at % load	Prime Rating	
100%	7.6 (2.0)	6.5 (1.7)
75%	5.9 (1.6)	5.1 (1.3)
50%	4.4 (1.2)	3.8 (1.0)
25%	3.5 (0.9)	2.6 (0.7)

Fuel Consumption, EPA Certified	60 Hz	50 Hz
Diesel, Lph (gph) at % load	Standby Rating	
100%	9.0 (2.4)	— —
75%	7.1 (1.9)	— —
50%	5.2 (1.4)	— —
25%	2.8 (0.7)	— —
Diesel, Lph (gph) at % load	Prime Rating	
100%	8.1 (2.1)	— —
75%	6.4 (1.7)	— —
50%	4.7 (1.2)	— —
25%	2.9 (0.8)	— —

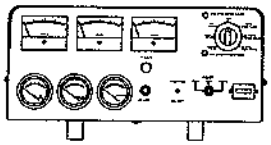
Controllers



Decision-Maker™ 550 Controller
Audiovisual annunciation with NFPA 110 Level 1 capability.
Programmable microprocessor logic and digital display features.
Alternator safeguard circuit protection.
12- or 24-volt engine electrical system capability.
Remote start, remote annunciation, and remote communication options.
Refer to G6-46 for additional controller features and accessories.



Decision-Maker™ 3+, 16-Light Controller
Audiovisual annunciation with NFPA 110 Level 1 capability.
Microprocessor logic, AC meters, and engine gauge features.
12- or 24-volt engine electrical system capability.
Remote start, prime power, and remote annunciation options.
Refer to G6-30 for additional controller features and accessories.



Decision-Maker™ 1 Controller
Single-light annunciation and basic controls with NFPA capability.
Relay logic, AC meters, and engine gauge features.
12-volt engine electrical system capability only.
Remote or automatic start options.
Refer to G6-29 for additional controller features and accessories.

KOHLER CO., Kohler, Wisconsin 53044 USA
Phone 920-565-3381, Fax 920-459-1646
For the nearest sales and service outlet in the
US and Canada, phone 1-800-544-2444
KohlerPowerSystems.com

Kohler Power Systems
Asia Pacific Headquarters
7 Jurong Pier Road
Singapore 619159
Phone (65)264-6422, Fax (65)264-6455

Standard Features and Accessories

Additional Standard Features

- Alternator Protection (standard with 550 controller)
- Battery Rack and Cables
- Integral Vibration Isolation
- Oil Drain Extension
- Operation and Installation Literature

Accessories

Enclosed Unit

- ☐ Sound Enclosure (with enclosed critical silencer)
- ☐ Weather Enclosure (with enclosed critical silencer)
- ☐ Weather Housing (with roof-mounted critical silencer)

Open Unit

- ☐ Exhaust Silencer, Critical (kit: PA-352663)
- ☐ Exhaust Silencer, Hospital (kit: GM32386-KP1)
- ☐ Flexible Exhaust Connector, Stainless Steel

Cooling System

- ☐ Block Heater
- ☐ Radiator Duct Flange
- ☐ Remote Radiator Cooling

Fuel System

- ☐ Auxiliary Fuel Pump
- ☐ Flexible Fuel Lines
- ☐ Fuel Pressure Gauge
- ☐ Subbase Fuel Tanks
- ☐ Subbase Fuel Tank with Day Tank

Electrical System

- ☐ Battery
- ☐ Battery Charger, Equalize/Float Type
- ☐ Battery Heater

Engine and Alternator

- ☐ Alternator, Wound Field (WF)
- ☐ Alternator, Permanent Magnet (PM)
- ☐ Air Cleaner, Heavy Duty
- ☐ Air Cleaner Restriction Indicator
- ☐ Alternator Strip Heater
- ☐ Bus Bar Kits
- ☐ Closed Crankcase Vent
- ☐ CSA Certification
- ☐ Current Transformer Kit
- ☐ Electronic Isochronous Governor (±0.25% freq. reg. steady state)
- ☐ EPA Certified Engine for Tier 2
- ☐ Line Circuit Breaker (NEMA type 1 enclosure)
- ☐ Line Circuit Breaker with Shunt Trip (NEMA type 1 enclosure)
- ☐ Optional Alternators
- ☐ Rated Power Factor Testing
- ☐ Rodent Guards
- ☐ Safeguard Breaker (not available with 550 controller)
- ☐ Skid End Caps

Paralleling System

- ☐ Reactive Droop Compensator
- ☐ Voltage Adjust Control
- ☐ Voltage Regulator Relocation Kit

Maintenance

- ☐ General Maintenance Literature Kit
- ☐ Maintenance Kit (includes standard air, oil, and fuel filters)
- ☐ NFPA 110 Literature
- ☐ Overhaul Literature Kit
- ☐ Production Literature Kit

Controller (550 and 16-Light Controllers)

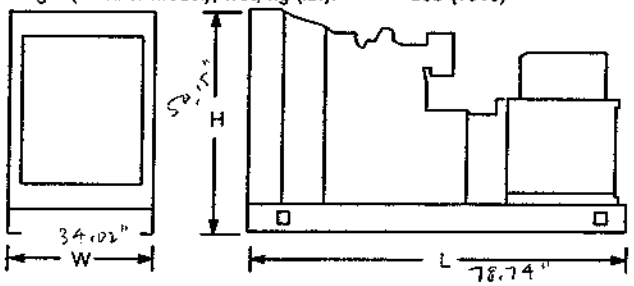
- ☐ Common Failure Relay Kit
- ☐ Communication Products and PC Software (550 controller only)
- ☐ Customer Connection Kit
- ☐ Dry Contact Kit (isolated alarm)
- ☐ Engine Prealarm Sender Kit
- ☐ Prime Power Switch (550 controller only)
- ☐ Remote Annunciator Panel
- ☐ Remote Audiovisual Alarm Panel
- ☐ Remote Emergency Stop Kit
- ☐ Remote Mounting Cable
- ☐ Run Relay Kit

Miscellaneous Accessories

- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

Dimensions and Weights

Overall Size, L x W x H, mm (in.):
Wide Skid: 2000 x 1040 x 1274 (78.74 x 40.94 x 50.15)
Narrow Skid: 2000 x 864 x 1274 (78.74 x 34.02 x 50.15)
Weight (radiator model), wet, kg (lb.): 685 (1510)



NOTE: This drawing is provided for reference only and should not be used for planning installation. Contact your local distributor for more detailed information.

DISTRIBUTED BY:

CLIN 471 -Bill of Materials

CLIN 471 ---- ATS Model: ZCM-564741-0150, OPEN Transition ,150 amps,240 volts,1 phase

Please review the bill-of-materials for your selection. Click on the highlighted part numbers to display the contents of each kit. When your review is complete, click the "Back" button to return to the CLIN Description page to continue the ordering process.

Part Number	Qty	Description
701-30-1009-FAA	1	Literature Kit, Open Transition ATS
CE-aux	4	Auxiliary Contact, Closed in Emergency, installed
CN-aux	4	Auxiliary Contact, Closed in Normal, installed acc
DD-18-JD4	1	Voltmeter and Ammeter, installed accessory, 190-240v
DD-34-A	1	Source Monitor, Inphase
DD-34-J	1	Source Monitor, Over/Under Volt & Freq
DD-34-Z	1	Source Monitor, Phase Rotation
DD-51-A	1	RS-485 Communications Module
DD-8-C	1	Time Delay Override switch, Emergency to Normal
GM34365-C471	1	Spec Number
KD-6-T	1	Extended Load Test Switch, 3 Position
Kohler ZCM-564741-0150	1	Kohler 240V, Single Phase, 150A, Open Transition A

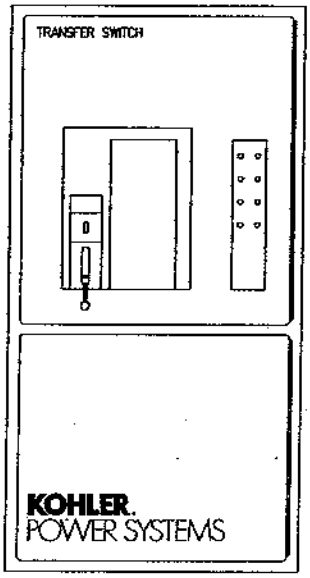
END OF CLIN 471

Model: ZCM/ZCB
Bypass Isolation Switch

KOHLER. POWER SYSTEMS

Automatic
Transfer Switches

ISO 9001
KOHLER POWER SYSTEMS
NATIONALLY REGISTERED



Standard Features

- UL 1008 listed at 480 VAC and CSA certified at 600 VAC
- Ratings from 150 to 4000 amps
- Equipped with M340+ microprocessor electrical controls. See specification sheet G11-56 for electrical control features and available options
- Ratings of bypass switch and automatic transfer switch identical
- Available in 2-, 3-, or 4-pole configurations
- Available to 600 VAC, 60 or 50 Hz
- Suitable for emergency and standby applications on all classes of load, 100% tungsten rated through 400 amps
- NEMA type 1 enclosure
- Load not interrupted during bypass operation
- Exceeds UL 1008 requirements for temperature rise after overload and endurance tests in unventilated enclosure
- Auxiliary position contacts: 2 closed on normal switch position, 2 closed on emergency switch position

Model ZCM/ZCB Programmed Transition

- Adjustable center-off time: 2–40 seconds with solid-state controls; 0:00–99:00 min.:sec. with microprocessor controls

Model ZCM/ZCB Standard Transition

- Transfer time less than 100 milliseconds (6 cycles @ 60 Hz)

Contactor Ratings*

Switch Rating (amps)	Withstand and Closing Current Ratings, Maximum Current in RMS Symmetrical Amperes When Coordinated With								
	Current-Limiting Fuses				Molded-Case Circuit Breakers				
					Any Manufacturer's (3 cycles)			Specific Manufacturer's (See the Following Tables)	
	Max. Size (amps)	@ 480 VAC Max.	@ 600 VAC Max.	Class	@ 480 VAC Max.	@ 600 VAC Max.	Max. Size (amps)	@ 480 VAC Max.	@ 600 VAC Max.
150 225 260 400	600	200,000	150,000	J	35,000	30,000	800	50,000	42,000
		100,000	—	RK5, RK1					
600	750	200,000	150,000	J, L, RK5, RK1	50,000	42,000	800	65,000	50,000
800	1000	200,000	150,000	L			1600	85,000	65,000
1000	1200								
1200	1500								
1600	2000				100,000	85,000	2500	100,000	85,000
2000	2500								
2500	4000						4000		
3000									
4000	6000								

* UL 1008 listed at 480 VAC and CSA listed at 600 VAC.

Contactor Ratings with Coordinated Circuit Breakers, 480 V Maximum, UL Listed and CSA Certified

The following chart lists contactor withstand and closing ratings (WCR) with specific manufacturer's circuit breakers.

Switch Rating	Molded-Case Circuit Breakers			
	WCR, RMS Symmetrical Amperes	Manufacturer	Type or Class	Maximum Size (amps)
150, 225, 260, 400	50,000	General Electric	SFL, SFP, TFL, THLC2	250
			SGL4, SGP4, TB4, THLC4, TLB4	400
			SGL6, SGP6, SGPA, TB6, TJL4V, TKL4V, TJL1S-6S	600
			SKL8, SKP8, TB8, SKH8	800
		Merlin Gerin	CF250L, CF250H	250
			CJ400L, CK400H, CJ400H, CK400N	400
			CJ600H	600
			CK800H, CK800N	800
		ITE	CFD6, HFD6	250
			CJD6, SCJD6, HHJD6, HHJXD6 SHJD6, HJD6	400
			CLD6, SCLD6, HHLD6, HHLXD6, SHLD6, HLD6	600
			CMD6, SCMD6, HMD6, SHMD6, HMXD6, MD6, MXD6, SMD6	800
		Square D	KI, KC	250
			LI, LXI, LX, LE, LC	600
			MX, MH, ME	800
		Cutler-Hammer	HJD, JDC	250
			HKD, CHKD, KDC, LCL, LA TRI-PAC	400
			HLD, CHLD, LDC, CLDC	300-600
			NB TRI-PAC	300-800
600	65,000	ITE	CLD6, HLD6, SCLD6, SHLD6	600
			CMDL, SCMD6, HMD6, SHMD6	800
		General Electric	TB6, TJL, SGL6, SGP6	600
			TB8, TP, THP, TC, THC, SKL8, SKP8	800
		Square D	LC, LE, LI, LX, LXI	600
			ME, MH, MX, NC, NE, NX	800
		Cutler-Hammer	CHDC, CLDC, HLD, LDC	600
			CHMDL, HMDL, NB TRI-PAC, DSL206	800
800, 1000, 1200	85,000	General Electric	SKP8, TB8, THC, THP	800
			SKP12	1200
			THP, THC, TRP	1600
		Merlin Gerin	CK1000L	1200
			CM1600	1600
		ITE	CMD6, SCMD6	800
			CND6, SCND6	1200
			CPD6	1600
		Square D	NC, NE, NX	1200
			PCF, PEF, PHF, PXF	1600
		Cutler-Hammer	NB TRIPAC	800
			CNDC, NDC	1200
			CRDC, PB TRIPAC, PC, PCC, RDC	1600
1600, 2000, 2500, 3000, 4000	100,000	Any, 4000 Ampere Maximum		4000

Contactor Ratings with Coordinated Circuit Breakers, 600 V Maximum, CSA Certified

The following chart lists contactor withstand and closing ratings (WCR) with specific manufacturer's circuit breakers.

Switch Rating (amps)	Molded-Case Circuit Breakers			
	WCR, RMS Symmetrical Amperes	Manufacturer	Type or Class	Maximum Size (amps)
150, 225, 260, 400	42,000	General Electric	THLC2	250
			SGL4, SGP4, TB4, THLC4	400
			SGL6, SGP6, TB6	600
			SKL8, SKP8, TB8	800
		Merlin Gerin	CF250L	250
			CJ400L, CK400H	400
			CK800H	600
		ITE	CFD6	250
			CJD6, SCJD6, HHJD6, HHJXD6	400
			CLD6, SCLD6, HHLD6, HHLDX6	600
			CMD6, SCMD6, HMD6, SHMD6, HMXD6	800
		Cutler-Hammer	KDC, LCL, LA TRI-PAC	400
			LDC, CLDC	300–600
			NB TRI-PAC	300–800
		Square D	KI	250
			LI, LXI	600
600	50,000	General Electric	TB6, SGL6, SGP6	600
			TB8, THP, THC, SKP8	800
		ITE	CLD6, SCLD6	600
			CMD6, HMD6, SCMD6, SHMD6	800
		Square D	LI, LXI	600
			NC, NE, NX	800
		Cutler-Hammer	CLDC, LDC	600
			NB TRI-PAC, DSL206	800
800, 1000, 1200	65,000	General Electric	SKP8, TB8, THC, THP	800
			SKP12	1200
			THC, THP, TRP	1600
		Merlin Gerin	MP16H1, MP16H2, MC16H1	1600
		ITE	CMD6, SCMD6	800
			CND6, SCND6	1200
			CPD6, HPD6, HRD6	1600
		Square D	NC, NE, NX	1200
			PCF, PEF, PHF, PXF	1600
		Cutler-Hammer	NB TRIPAC	800
			PC, PCC, PB TRI-PAC, RDC, CRDC	1600
1600, 2000, 2500, 3000, 4000	85,000	Any, 4000 Ampere Maximum		4000

Standard Features

Feature	Standard	Programmed Transition
Switches are factory-wired, interconnected, and tested prior to shipment.	•	•
The contactor is electrically operated and mechanically held by a simple, over-center mechanism.	•	•
The transfer switch has segmented silver tungsten alloy contacts with separate arcing contacts on all sizes of switches. Transfer switches have arc quenching grids, enclosed arc chambers, and wide contact air gap to ensure superior source-to-source isolation on all units.	•	•
The transfer switch components are accessible for inspection and maintenance without removal of the switch or the power conductors.	•	•
A mechanical indicator and transparent chamber cover aid inspection, improve safety, and ease position designation.	•	•
The transfer switch has a double-throw, interlocked operation.	•	•
The disconnect switch inhibits transfer when activated.	•	•
The programmed transition function allows the load's magnetic field to collapse before transferring to either source.		•
Switching is accomplished by a dual DC solenoid drive for rapid operation and long life.		•
The time delay after the opening of the closed contacts and before the closing of the open contacts is adjustable.		•
The transfer switch is suited for applications where the load consists of large motors and/or transformers.		•
Automatic transfer switch is located on a drawout mechanism to facilitate maintenance.	•	•
Emergency power systems can be electrically tested without disturbing the load.	•	•
Power cables do not have to be disconnected to remove the automatic transfer switch.	•	•
The engine start circuit is maintained during bypass operation. Normal power failure causes the engine start contact to close even with the automatic transfer switch removed.	•	•
The logic panel is mounted on the enclosure door and connected by a wire harness and multipin disconnect plugs. The automatic transfer switch and/or the control panel may be tested, isolated, or removed for maintenance without load interruption.	•	•
Diagnostic lights and detailed instructions allow simple step-by-step operation.	•	•
Mechanical and electrical interlocks ensure proper sequence of operation.	•	•
Bypass switch contacts are closed only during the bypass isolation operation.	•	•
A silver-plated, copper bus interconnection for the automatic transfer switch and bypass switch is standard for all sizes of switches.	•	•

Weights and Dimensions

Number of Poles	Amperes	Complete NEMA Type 1 Unit			
			Dimensions, mm (in.)		
		Weight, kg (lb.)	Height	Width	Depth
2	150, 225, 260, 400	340 (755)	2108 (83.00)	762 (30.00)	787 (31.00)
	600	549 (1220)	2286 (90.00)	914 (36.00)	718 (28.25)
	800	610 (1355)	2286 (90.00)	1016 (40.00)	718 (28.25)
3	150, 225, 260, 400	340 (755)	2108 (83.00)	762 (30.00)	787 (31.00)
	600	549 (1220)	2286 (90.00)	914 (36.00)	718 (28.25)
	800, 1000, 1200	610 (1355)	2286 (90.00)	1016 (40.00)	718 (28.25)
	1600, 2000	1406 (3100)	2286 (90.00)	1016 (40.00)	1552 (61.10)
	2500, 3000	1769 (3900)	2286 (90.00)	1016 (40.00)	1857 (73.10)
	4000	2994 (6600)	2286 (90.00)	1206 (47.50)	2032 (80.00)
4	150, 225, 260, 400	388 (855)	2108 (83.00)	762 (30.00)	787 (31.00)
	600	614 (1365)	2286 (90.00)	1016 (40.00)	718 (28.25)
	800, 1000, 1200	707 (1570)	2286 (90.00)	1168 (46.00)	718 (28.25)
	1600, 2000	1815 (4000)	2286 (90.00)	1270 (50.00)	1552 (61.10)
	2500, 3000	2268 (5000)	2286 (90.00)	1270 (50.00)	1857 (73.10)
	4000	3311 (7300)	2286 (90.00)	1372 (54.00)	2032 (73.00)

Bypass Isolation Switch Description and Operation

The bypass-isolation transfer switch consists of two major components—an automatic transfer switch and a bypass-isolation switch. The automatic transfer switch power switching components are similar to the components used in the proven Model ZCS switch. They are available in standard and programmed transition configurations and constructed for rugged, reliable operation. The bypass-isolation transfer switch has the same heavy-duty silver alloy contacts and silver-plated bus bar interconnections as those of the Model ZCS switch.

The automatic transfer switch is installed on a drawout mechanism with electrical and mechanical interlocks for secure removal of the transfer switch after the load has been bypassed and isolated.

The bypass section is a basic manually operated transfer switch that includes a manual load transfer handle and a control and interlock system. The switches are mounted in a compact enclosure and completely interconnected, requiring only the source and load connections. Once installed, no cables need to be removed to isolate the transfer switch module for maintenance or inspection.

The electrical controls are mounted on the enclosure door and are connected to the bypass-isolation transfer switch by a wiring harness and multipin disconnect plugs. The transfer switch or electrical control panel may be tested, isolated, or removed for maintenance without load interruption.

Additional load-break contacts that cause load interruption during bypass-isolation functions are not required. The bypass-isolation switch contacts are out of the system's current path except during actual bypass operation. Therefore, they are not constantly exposed to the destructive effects of potential fault currents. The normal source, emergency source, and load are connected between the automatic transfer switch and the bypass-isolation switch through solid-braced isolating contacts that open when the transfer switch is isolated. All current-carrying components provide withstand current ratings in excess of those specified in UL-1008 standards.

The transfer switch has three positions:

- **Automatic:** The automatic transfer switch is supplying power to the load, and the bypass switch is in the open position. This position is the normal operating position.
- **Test:** The bypass switch is closed and supplying power to the load. The automatic transfer switch's electrical controls are powered and the test switch on the enclosure door can be used to test the automatic transfer switch.
- **Isolate:** The bypass switch is closed and supplying power to the load. The automatic transfer switch is withdrawn from all power and is ready for maintenance.

The bypass-isolation switch has the same basic design as the transfer switch and thus has the same electrical ratings. Manually operated, it features high-speed, quick-make, quick-break contact action. The bypass-isolation switch has three basic positions:

- **Automatic:** Normal bypass contacts open and emergency bypass contacts open
- **Bypass Normal:** Normal bypass contacts closed and emergency bypass contacts open
- **Bypass Emergency:** Normal bypass contacts open and emergency bypass contacts closed

Model Numbers*†

Specs		Model Numbers with NEMA Type 1 Enclosures†	
Poles	Amps	Standard Switch	Programmed Transition Switch
2	150	ZCM-5xx231-0150	ZCM-6xx231-0150
	225	ZCM-5xx231-0225	ZCM-6xx231-0225
	260	ZCM-5xx231-0260	ZCM-6xx231-0260
	400	ZCM-5xx231-0400	ZCM-6xx231-0400
	600	ZCB-5xx231-0600	ZCB-6xx231-0600
	800	ZCB-5xx231-0800	ZCB-6xx231-0800
3	150	ZCM-5xx341-0150	ZCM-6xx341-0150
	225	ZCM-5xx341-0225	ZCM-6xx341-0225
	260	ZCM-5xx341-0260	ZCM-6xx341-0260
	400	ZCM-5xx341-0400	ZCM-6xx341-0400
	600	ZCB-5xx341-0600	ZCB-6xx341-0600
	800	ZCB-5xx341-0800	ZCB-6xx341-0800
	1000	ZCB-5xx341-1000	ZCB-6xx341-1000
	1200	ZCB-5xx341-1200	ZCB-6xx341-1200
	1600	ZCB-5xx341-1600	ZCB-6xx341-1600
	2000	ZCB-5xx341-2000	ZCB-6xx341-2000
	2500	ZCB-5xx341-2500	ZCB-6xx341-2500
	3000	ZCB-5xx341-3000	ZCB-6xx341-3000
	4000	ZCB-5xx341-4000	ZCB-6xx341-4000
4	150	ZCM-5xx641-0150	ZCM-6xx641-0150
	225	ZCM-5xx641-0225	ZCM-6xx641-0225
	260	ZCM-5xx641-0260	ZCM-6xx641-0260
	400	ZCM-5xx641-0400	ZCM-6xx641-0400
	600	ZCB-5xx641-0600	ZCB-6xx641-0600
	800	ZCB-5xx641-0800	ZCB-6xx641-0800
	1000	ZCB-5xx641-1000	ZCB-6xx641-1000
	1200	ZCB-5xx641-1200	ZCB-6xx641-1200
	1600	ZCB-5xx641-1600	ZCB-6xx641-1600
	2000	ZCB-5xx641-2000	ZCB-6xx641-2000
	2500	ZCB-5xx641-2500	ZCB-6xx641-2500
	3000	ZCB-5xx641-3000	ZCB-6xx641-3000
	4000	ZCB-5xx641-4000	ZCB-6xx641-4000

xx = Voltage, Frequency:

53 = 220 V, 60 Hz	64 = 240 V, 60 Hz	71 = 380 V, 50 Hz
60 = 600 V, 60 Hz	66 = 480 V, 60 Hz	72 = 380 V, 60 Hz
62 = 120 V, 60 Hz	68 = 208 V, 60 Hz	73 = 416 V, 50 Hz
63 = 220 V, 50 Hz		

* Models listed in this table are UL 1008 listed at 480 V and below, CSA certified at 600 V.

† The model number changes from xxx-xxxxx1 to xxx-xxxxx0 for open units, xxx-xxxxx2 for NEMA type 12 enclosures, or xxx-xxxxx3 for NEMA type 3R enclosures. Only models with NEMA type 1 enclosures are CSA certified. Contact the factory for models with NEMA type 12 or 3R enclosures or open units.

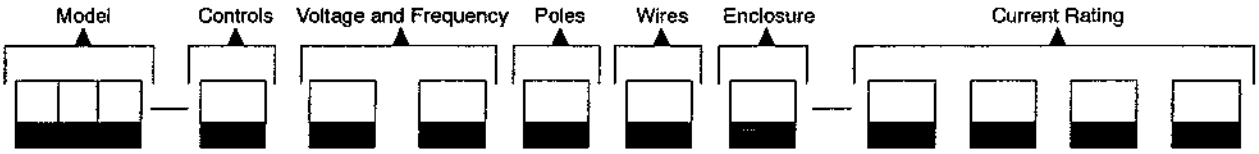
Application Data

Al/Cu UL-Listed Solderless Screw-Type Terminals for External Power Connections		
Switch Rating (amps)	Normal, Emergency, and Load Terminals	
	Cables per Pole	Range of Wire Sizes
150–400	2	1/0 to 250 MCM
	1	#4 AWG to 600 MCM
600	2	#2 AWG to 600 MCM
800–1200	4	#2 AWG to 600 MCM
1600–4000	Bus Bar Connection	

KOHLER CO., Kohler, Wisconsin 53044 USA
Phone 920-565-3381, Fax 920-459-1646
For the nearest sales and service outlet in the US and Canada, phone 1-800-544-2444
KohlerPowerSystems.com

Kohler® Power Systems
Asia Pacific Headquarters
7 Jurong Pier Road
Singapore 619159
Phone (65)264-6422, Fax (65)264-6455

Record the transfer switch model number in the boxes below. The transfer switch model number defines characteristics and ratings as explained in the accompanying chart.



Kohler® Part Number Key

This chart explains the Kohler® transfer switch model numbering system. The sample model number shown is for a Model ZCB automatic transfer switch that uses a standard contactor power switching device with M340+ microprocessor electrical controls rated at 600 volts, 60 hertz, 3 phase, 3 poles, and 4 wires in a NEMA type 1 enclosure with a current rating of 1000 amperes. Not all possible combinations are available.

SAMPLE MODEL NUMBER

ZCB-560341-1000

Switch Classification or Family
ZCM: 150–400 amp automatic transfer and bypass isolation switch
ZCB: 600–4000 amp automatic transfer and bypass isolation switch

Electrical Controls
5: M340+ microprocessor
6: M340+ microprocessor with programmed transition

Voltage and Frequency (other codes possible)

53: 220 Volts, 60 Hz	60: 600 Volts, 60 Hz	62: 120 Volts, 60 Hz
63: 220 Volts, 50 Hz	64: 240 Volts, 60 Hz	66: 480 Volts, 60 Hz
68: 208 Volts, 60 Hz	71: 380 Volts, 50 Hz	72: 380 Volt, 60 Hz
73: 416 Volts, 50 Hz		

Number of Poles and Phase

2: 2 pole, 1 phase	3: 3 pole, 3 phase	4: 3 pole, 1 phase
6: 4 pole, 3 phase		

Number of Wires

3: 3 wire	4: 4 wire

Enclosure

0: Open unit*	1: NEMA type 1	2: NEMA type 12*
3: NEMA type 3R*		

* Contact the factory.

Current Rating
Numbers indicate the current rating of the switch in amperes

ZCM-?-64231-0150

DISTRIBUTED BY:

Availability is subject to change without notice. Kohler Co. reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever. Contact your local Kohler Co. generator distributor for availability.

CLIN 331 -Bill of Materials

CLIN 331 ---- DAYTANK Model: UTRS-10, 120 volts,1 phase,10 gallon,2 GPM (1/3 HP) SP,4 GPM (1/3 HP) RP

Please review the bill-of-materials for your selection. Click on the highlighted part numbers to display the contents of each kit. When your review is complete, click the "Back" button to return to the CLIN Description page to continue the ordering process.

Part Number	Qty	Description
108160 (Tramont)	1	Check valve, 3/4 in.
214490-sup (Tramont)	1	2 GPM Supply pump with 1/3 HP motor
214500-rev (Tramont)	1	4 GPM Reverse pump with 1/3 HP motor
214730 (Tramont)	1	Solenoid Valve, 120v, 10 GPM, 3/4 in.
215510 (Tramont)	1	Strainer/Filter, 100 mesh, 23 GPM, 3/4 in.
215630 (Tramont)	1	Critical High relay
215640 (Tramont)	1	Reverse Pump relay
215740 (Tramont)	1	Inspection Plate and Gasket
216000 (Tramont)	1	System 2000+ Electronic Control Module
216090 (Tramont)	1	Fuel Level Float Sensor for Day Tank controller
216170 (Tramont)	1	Fuel-in-basin Sensor switch
216190 (Tramont)	1	Critical High Emergency Shutdown controls
2900 (Tramont)	1	Rupture Basin, 15 gallon
GM19894 (Kohler)	1	Day Tank, 10 gallon

END OF CLIN 331

CLIN 561 -Bill of Materials

CLIN 561 ---- LOADBANK Model: n/a, 20 kw,240 volts,1 phase, Radiator mounted,Automatic and Manual mode

Please review the bill-of-materials for your selection. Click on the highlighted part numbers to display the contents of each kit. When your review is complete, click the "Back" button to return to the CLIN Description page to continue the ordering process.

Part Number	Qty	Description
END OF CLIN 561		

CLIN 647 -Bill of Materials

CLIN 647 ---- MUFFLER Model: PA-324469, Residential

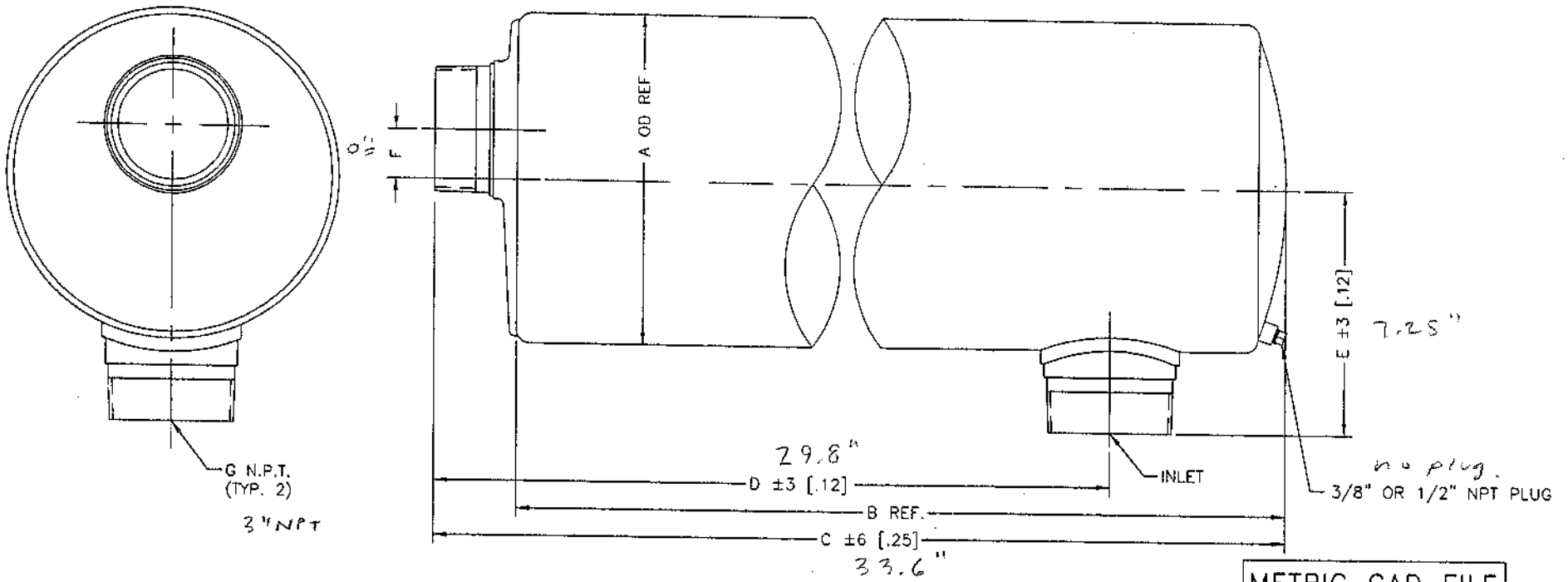
Please review the bill-of-materials for your selection. Click on the highlighted part numbers to display the contents of each kit. When your review is complete, click the "Back" button to return to the CLIN Description page to continue the ordering process.

Part Number	Qty	Description
END OF CLIN 647		

PART NO.	REV	TYPE	A OD	B	C	D	E	F	G	DRAIN PLUG REQUIRED
253236	U	CRITICAL	216 [8.5]	879 [34.6]	922 [36.3]	810 [31.9]	178 [7.00]	0	3" N.P.T.	NO
273720	T	CRITICAL	307 [12.1]	1471 [57.9]	1547 [60.9]	1410 [55.5]	230 [9.05]	46 [1.8]	4" N.P.T.	YES
276257	T	CRITICAL	229 [9.0]	1011 [39.8]	1062 [41.8]	975 [38.4]	165 [6.5]	0	2" N.P.T.	YES
273718	U	INDUSTRIAL	216 [8.5]	777 [30.6]	853 [33.6]	757 [29.8]	184 [7.25]	0	3" N.P.T.	NO
273719	T	INDUSTRIAL	229 [9.0]	808 [31.8]	884 [34.8]	759 [29.9]	191 [7.50]	0	4" N.P.T.	YES
276256	T	INDUSTRIAL	193 [7.6]	574 [22.6]	625 [24.6]	541 [21.3]	147 [5.80]	0	2" N.P.T.	YES
352647	T	CRITICAL	282 [11.1]	1270 [50.0]	1341 [52.8]	1227 [48.3]	217 [8.55]	0	3" N.P.T.	YES
GM10078	T	RESIDENTIAL	257 [10.1]	970 [38.2]	1044 [41.1]	940 [37.0]	205 [8.1]	46 [1.8]	3" N.P.T.	YES
GM10079	T	RESIDENTIAL	257 [10.1]	1250 [49.2]	1323 [52.1]	1194 [47.0]	205 [8.1]	0	4" N.P.T.	YES
GM32151	V	HOSPITAL	358 [14.1]	1689 [66.5]	1758 [69.2]	1610 [63.4]	257 [10.1]	120 [4.0]	4" N.P.T.	YES

REV	DATE	REVISION	BY
S	3-31-98	(B-1) 3/8 OR 1/2 NPT PLUG WAS CONDENSATION PLUG;	
		(A-3) CONDENSATION NOTE ADDED [54145]	LOS
T	4-7-99	(C-4) GM10078, & GM10079 ADDED, (A-1) METRIC DWG WAS ENGLISH	
		[59962]	SAM
U	6-6-99	(D-2) DRAIN PLUG REQ FOR 253236 & 273718 REMOVED (A-3) DRAIN	
		PLUG NOTE MOVED TO CHART [59416]	SAM
V	10-29-03	(D-4) GM32151 ADDED [70740]	SAM

REVISION BLOCK INDICATES REVISION LEVEL OF DRAWING NOT PART REVISION. SEE PART REVISION LEVEL BEHIND PART NUMBER FOR CURRENT PART REVISION LEVEL.



METRIC CAD FILE

SILENCER IS TO BE SUPPLIED PACKED SEPARATELY IN A CORRUGATED CARTON SUITABLE FOR INDIVIDUAL RESHIPMENT OF SILENCER.

COLOR MAY BE EITHER HIGH TEMP BLACK OR ALUMINUM.

DIMENSIONS IN [ ] ARE INCH EQUIVALENTS.

MATERIAL: ALUMINIZED STEEL

UNLESS OTHERWISE SPECIFIED –
1) DIMENSIONS ARE IN MILLIMETERS
2) TOLERANCES ARE:
X.XX ± 0.25
X.X ± 1.0
X ± 1.5
ANGLES ± 0°30'
SURFACE FINISH 125 MAX.
THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN DR	12-1-82
CHECKED EB	12-10-82
APPROVED LW	12-10-82

PLOTTED DATE

TITLE: SILENCER

SCALE 0.4X | CAD NO. 253236.DWG | SHEET 1-1

DWG. NO. 253236 | C